REMOTELY CONTROLLED WALL-MOUNTED TELEVISION BRACKET

FIELD OF INVENTION

[0001] The embodiments of the present invention relate to a controllable wall-mounted support. More particularly, a remotely controlled wall-mounted bracket for a flat panel television or similar article.

BACKGROUND

[0002] As technology continues its exponential advancement, consumers reap the rewards. One particular example relates to the availability of new types of televisions, namely flat panel televisions. Some of the most popular types of flat panel televisions are facilitated by plasma, LCD or organic light-emitting diode technology. Such technology allows flat panel televisions to be built only inches thick.

[0003] While flat panel televisions are relatively expensive, it is anticipated that prices will fall and sales will double each year for at least the next couple of years. In fact, while only 2% of current television sales comprise flat panel models, it is predicted that the percentage will increase to 10% by 2006. The predictions are supported by the constant news regarding new companies entering the flat panel television market. In just the last year, Gateway®, Dell® and Hewlett-Packard® have announced they will enter the flat panel television market.

[0004] While the flat panel technology is excellent and improving seemingly every day, there is still a continuing problem with flat panel televisions which hang on a wall or other flat support surface. That is, the ability to view the television from an optimum vantage point is limited. Since flat panel televisions are fixedly mounted flush with a wall or other support surface, they dictate the arrangement of furniture and other items in the subject room. In the past, conventional cathode ray tube televisions have been supported by movable stands or rested on rotatable surfaces which make the televisions mobile thereby eliminating much of the concern over the ability to view the television from an optimum angle (i.e., straight on).

[0005] Thus, there continues to be the need for a device, mechanism or method of controlling the orientation of a mounted flat panel television. Moreover, it is desired that the device, mechanism or method be specifically designed for newly manufactured flat panel televisions and also available as an after market product. Importantly, the operation of the device, mechanism or method of controlling the orientation should be capable of being remotely controlled.

SUMMARY

[0006] Accordingly, the embodiments of the present invention comprise a wall-mounted bracket for supporting a flat panel television or similar mounted article. The bracket is further remotely controlled so that the orientation of the flat panel television may be articulated or adjusted, including tilt, swivel, up, down, right, left, in, out and any combination thereof, to suit any viewing arrangement.

[0007] In a first embodiment, four threaded rods form a rectangular support bracket. Four attachment members positioned at each corner of the support bracket, and connecting the four threaded rods, provide a means for securing the bracket to a wall or similar support surface. Two motorized carriages, which traverse along each rod, in conjunction with corresponding rigid tubes joined to the television provide a means for adjusting the orientation of the television display or screen.

[0008] By causing the carriages to traverse along the threaded rods, the attached rigid tubes alter the position of the television accordingly. For example, by moving the carriages on a right vertical threaded rod to a generally upper position and the carriages on a left vertical threaded rod to a generally lower position, the television display is turned in a counter-clockwise fashion. Similarly, to move the television display in a right or left direction, the carriages on both the upper and lower horizontal threaded rods are moved in the respective direction. The precise movement of the carriages related to various television orientations is explained in more detail below.

[0009] Movement of the carriages is controlled by a remote control device similar to the remote control device used with a television. In fact, the remote operation of the carriages is suitable for integration into a conventional television remote control device

or may be subject to its own separate remote control device. The operation of the separate remote control device can also be downloaded into a universal remote control device thereby reducing the number of remote control devices needed to operate an complete entertainment system of electronic devices. The remote control device may be facilitated by infrared, FM or any other suitable signals. Receivers incorporated within the carriages receive the signals transmitted by the remote control device and processors or similar devices cause the carriages to traverse accordingly.

[0010] The embodiments of the present invention permit a user to position the flat panel display in the optimum viewing position regardless of the user's position within a viewing room. Moreover, many homes include rooms separated by a short wall, railing or likewise. In such circumstances, the television display may be positioned so that a user can view the display optimally from one or more adjoining rooms. For example, even while cooking dinner in a kitchen adjoining the room being occupied by the television, an individual can still watch the television from an optimum angle.

[0011] Alternative embodiments, modifications and variations are evident from the corresponding drawings, detailed description and claims as set forth herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0012] Fig. 1 illustrates a front view of a first embodiment of the assembly with a flat panel television in a traditional position flush with a wall;

[0013] Fig. 2 illustrates a block diagram of a carriage incorporating a processor, signal receiver and motor;

[0014] Fig. 3 illustrates a front view of the first embodiment of the assembly with the flat panel television swivelled counter-clockwise;

[0015] Fig. 4 illustrates perspective front view of the first embodiment of the assembly with the flat panel television in a lowered position;

[0016] Fig. 5 illustrates a perspective front view of the first embodiment of the assembly with the television shifted to the right;

[0017] Fig. 6 illustrates a top view of the first embodiment of the assembly with the television shifted to the right;

[0018] Fig. 7 illustrates a perspective front view of the first embodiment of the assembly with the left portion of the television titled outward from the wall;

[0019] Fig. 8 illustrates a top view of the first embodiment of the assembly with a portion of the television tilted outward from the wall;

[0020] Fig. 9 illustrates a side view of the first embodiment of the assembly with a bottom portion of the television tilted outward from the wall;

[0021] Fig. 10 illustrates a detailed perspective view of a linear actuator of the first embodiment of the assembly;

[0022] Fig. 11 illustrates a side view of the assembly incorporating extensions for providing additional ranges of assembly motion;

[0023] Fig. 12 illustrates a first alternative embodiment;

[0024] Fig. 13 illustrates a second alternative embodiment; and

[0025] Fig. 14 illustrates a remote control device.

DETAILED DESCRIPTION

[0026] Reference is now made to the figures wherein like parts are referred to by like numerals throughout. Fig. 1 illustrates a front view of a first embodiment of the bracket assembly, generally designated by reference numeral 100, with a flat panel television ("FPT") 110 in a traditional position with its monitor, screen or display 115 flush and parallel with a support wall 117. The FPT 110 is shown joined to a plurality of movable carriages 120 by means of rigid tubes 130. In turn, the movable carriages 120 are attached to threaded rods 140 which, along with corner attachment members 145, form a bracket frame 105. The attachment members 145 include apertures 148 for receipt of nails, screws or similar wall fasteners.

[0027] The movement of the carriages 120 is facilitated by an internal motor (not shown). In a first embodiment, the carriages 120 may be electronic linear actuators. Activation of the internal motors cause the carriages 120 to traverse along the rods 140. Forward and rear motor directions allow the carriages 120 to move up, down, left and right along rods 140. As detailed below, the movement of the carriages 120 can be remotely controlled. The orientation of the FPT 110 is controlled by the combination

of the movement of the carriages 120 and their impact on corresponding tubes 130 which join the carriages 120 to the FPT 110. The tubes 130 are generally rigid enough to both support and influence movement of the FPT 110. For ease of manufacture, the tubes 130 are pre-formed to prevent them from interfering with one another and to provide the necessary force on the FPT 110 to orientate the FPT 110 as desired. In addition, the tubes 130 are rotatably joined to the carriages 120 such that the rotation of the carriages 120 does not affect the position or orientation of the tubes 130.

[0028] A block diagram of Fig. 2, shows an embodiment having a processor 131 integrated within a carriage 120 and in communication with signal receiver 132. The signal receiver 132 receives control signals transmitted from a wired or wireless remote control device 133. The control signals are then processed and/or interpreted by the processor 131 which instructs the carriage 120 to move accordingly. The processor 131 may be in electrical or wireless communication with the carriage 120 and its motors 134. As those skilled in the art understand software is necessary to drive the processor 131 which causes the desired carriage 120 movement to occur, the intimate software details are not set forth herein.

[0029] Now referring to Fig. 3, the FPT 110 has been orientated in a counter-clockwise

position. To move into the counter-clockwise position as shown, the carriages 120R have moved upward along their supporting rod 140R while the carriages 120L have moved downward along their supporting rod 140L. In this manner, the tubes 130R and 130L act upon the FPT 110 causing the FPT 110 to move to the counter-clockwise position as shown.

[0030] Fig. 4 illustrates the FPT 110 in an orientation extended away from the frame 105 and supporting wall 117. Also, the FPT 110 has been lowered from the original orientation as shown in Fig. 1. To extend the FPT 110 to the position shown the carriages 120T have moved together near a center position of their supporting top rod 140T while the carriages (not visible) along bottom rod 140B have moved together near a center position of their supporting rod 140B. In this manner, the tubes 130T and

the tubes (not visible) along the bottom rod 140B have extended away from the frame 105 thereby forcing the FPT 110 away from the frame 105.

[0031] Fig. 5 illustrates the FPT 110 in an orientation shifted to the right of the original FPT 110 position as shown in Fig. 1. In this new orientation, the carriages 120L and carriages (not visible) along rod 140R are positioned near a center position of the rods 140L and 140R, respectively. One of the top carriages 120T-1 and bottom carriages 120B-1 have reached their horizontal limits. However, continued rightward motion by the second top carriage 120T-2 and second bottom carriage 120B-2 allow the FPT 110 to be shifted even farther in the rightward direction. Nonetheless, the length of each of the tubes 130L, 130R, 130T and 130B dictates the maximum distance the FPT 110 may be shifted in any direction. Fig. 6 shows an upper view of the FPT 110 as it is oriented in Fig. 5.

[0032] Fig. 7 illustrates the FPT 110 having a left portion extended from the frame 105 and support wall 117. In this manner, the left portion of the FPT 110 is angled outward for more clear viewing of the FPT display 115 by viewers seated to the right of the FPT 110. Similarly, Fig. 8 illustrates a top view of the FPT 110 having a right portion extended from the frame 105 and support wall 117. This orientation provides viewers seated to the left of the FPT 110 with an optimum view of the FPT display 115. Now referring to Fig. 9, a lower portion of the FPT 110 is extended from the frame 105 and support wall 117.

[0033] Fig. 10 illustrates a detailed perspective view of a carriage in the form of a linear actuator 121. The actuator 121 comprises a housing 122 for a motor (not shown). Opening 123 extends through the housing 122 so that the actuator 121 may traverse along a rod 140 about the opening 123. A window 124 or small opening integrated within said housing 122 allows an internal signal receiver access to a remotely transmitted control signal. An internal processor then instructs the actuator 121 to move along the rod 140 accordingly. The detailed operation of linear actuators and the like are known to those skilled in the art.

[0034] Fig. 11 shows a first alternative embodiment integrating extensions 135 between translatable rollers 170 and frame 175. Alternatively, the extensions may be

joined directly to the FPT 110. The extensions 135 shown are of the scissor type but other types may serve the same purpose. First ends of the extensions 135 are rotatably joined to the rollers 170 and second ends are rotatably joined to the frame 175 or FPT 110. In this manner, the frame 175 or FPT 110 is free to move in any direction desired. In practice, as sets of rollers 170 are translated along rods 140 the extensions 135 either extend or retract causing the frame 175 or FPT 110 to orient as desired. The rollers 170 act identically to the carriages 120 and in fact may be replaced by the carriages 120. One or more processors control the movements of the rollers 170.

[0035] Fig. 12 illustrates a second alternative embodiment using a series of telescoping or piston members 210. A first end of each telescoping member 210 is rotatably joined to rigid blocks 220 positioned at each corner of frame member 230. In this manner, the telescoping members 210 are free to move in any number of directions. As with the tube and carriage embodiment described above, the telescoping members 210 are remotely controlled by means of a remote control device and one or more processors integrated within the assembly 200 or the telescoping members 210. The one or more processors act in response to signals received from the remote control device to orientate the FPT 110 in the desired position. As set forth above, the signal receivers may also be incorporated in the processor or may be separate devices in communication with said processors. Frame 215 may be used to support the FPT 110 or the telescoping members 210 may be attached directly to the FPT 110.

[0036] Fig. 13 illustrates a third alternative embodiment comprising a motor driven frame member 310 supported by a pair of perpendicular rods 320. The perpendicular rods 320 provide means for the FPT 110 to be moved up, down, left and right. The rods 320 are joined to an outer frame assembly 330 by sleeves 325 such that the rods 320 are able to traverse therealong in either vertical or horizontal directions. Additional directions of movement are achieved by means of a rotatable joint member 340 integrated between the frame member 310 and the rods 320. Rods 345 extending from the joint member 340 provide means for the frame member 310 to be positioned. The rotatable joint member 340 allows tilt, swivel and rotation of the FPT 110. A processor integrated within the assembly 300 or the rotatable joint member 340 controls the

operation of the rods 320 and rotatable joint member 340 in response to received control signals. Again, the frame 310 may be used to support the FPT 110 or the may be attached directly to the FPT 110

[0037] It should be evident to those skilled in the art that the FPT 110 and its display 115 may be oriented in an infinite number of positions and is only limited by the mobility of the implemented positional devices (e.g., liner actuators, mobile frame, ball screw actuators, etc.).

[0038] Many other features and options are possible with each of the embodiments disclosed above. For instance, a leveler may be incorporated on the assembly to ensure that, if desired, the FPT 110 and its display 115 are level along a horizontal reference line at any orientation. Such leveling will occur automatically and without the need for the user to use the remote control device in an attempt to level the assembly remotely. In addition, a home, conventional or default position may be preprogrammed such that the remote control device includes a button dedicated to returning the FPT 110 to its home position. Similarly, multiple preferred orientations may be preprogrammed such that individual remote control device buttons may facilitate the preferred orientations.

[0039] Fig. 14 shows a wireless remote control device 400 which may be used to operate the assemblies of the embodiments of the present invention. In the embodiment shown, a first group of buttons 410 controls the up, down, right and left assembly movements, a second group of buttons 420 controls the tilt assembly movements and a third group of buttons 430 controls the clockwise and counterclockwise assembly movements. A fourth group of buttons 440, 450 and 460 corresponds to preprogrammed assembly positions. Thus, each of the buttons 440, 450 and 460 may be used to orientate the assembly into preferred stored positions. Button 470 returns the FPT 110 to a home position. Should the remote control device 400 lose power (e.g., batteries die), ideally the assembly automatically locks into a preprogrammed or default position as desired by the user. The processor 131, or memory in communication with the processor 131, is responsible for storing the preset and home positions.

[0040] Ideally, power is supplied to the remotely controlled assembly by an electrical cord suitable for plugging-in to a conventional outlet or by battery means. With either power supply means, it is preferred that the means be concealed from view.

[0041] While the description has focused on a wireless remote control device, it is understood that the remote control device may be wired and/or affixed to the wall adjacent the FPT 110. In this manner, the processor receives the control signals via an electrical connection (e.g., wire). Also, the processors may be integrated into numerous assembly positions as long as they are in communication with the positional devices.

[0042] Although the invention has been described in detail with reference to several embodiments, additional variations and modifications exist within the scope and spirit of the invention as described and defined in the following claims.